TECHNICAL REVIEW DOCUMENT
For
RENEWAL of OPERATING PERMIT 99OPLA208

Pioneer Natural Resources, USA – Burro Canyon Compressor Station
Las Animas County
Source ID 071/0037

Prepared by Blue Parish
November 2008 – June 2009

I. Purpose:

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed operating permit proposed for this site. The original Operating Permit was issued July 1, 1997, and expired on June 30, 2005. However, since a timely and complete renewal application was submitted, under Colorado Regulation No. 3, Part C, Section IV.C all of the terms and conditions of the existing permit shall not expire until the renewal operating permit is issued and any previously extended permit shield continues in full force and operation. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted February 27, 2004, updated APENs received on January 21, 2009, comments to the draft permit on June 3, 2009 and additional technical information submitted on various dates, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant's consultant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at http://www.cdphe.state.co.us/ap/Titlev.html.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Source

This source is classified as a natural gas gathering and compression facility defined under Standard Industrial Classification 1311. The facility consists of nine gas compressors powered by internal combustion engines for the purpose of delivering coal-bed methane gas into a pipeline for sales distribution. The facility also includes two electricity generators powered by internal combustion engines and two glycol dehydrators used to dry the coal-bed methane gas prior to delivery to the pipeline. Emissions from the compression engines are controlled with oxidizing catalysts.

The facility is located northwest of Trinidad in Las Animas County, Colorado. The area in which the facility operates is designated as attainment for all criteria pollutants. There are no Federal Class I designated areas within 100 km of this facility. New Mexico is an affected state within 50 miles of this facility.

There are no other Operating Permits associated with this facility.

This source is not subject to the Prevention of Significant Deterioration (PSD) review requirements and is not considered a major stationary source (potential to emit for each criteria pollutant is less than 250 tons per year). The nine compressor engines are equipped with oxidizing catalysts to limit total facility CO emissions to less than 250 tons per year, making this facility a synthetic minor source for PSD considerations.

MACT Applicability

HHH – Natural Gas Transmission and Storage:
The Burro Canyon Compressor Station is not a natural gas transmission and storage facility as described in 40 CFR Part 63 Subpart HHH, "National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage". The Burro Canyon Compressor Station is an upstream natural gas production-related gathering and compression station and not subject to this MACT.

HH – Oil and Natural Gas Production Facilities:
Under the provisions of 40 CFR Part 63 Subpart HH, "National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities" (Oil and Natural Gas Production MACT), only HAP emissions from glycol dehydrators and storage vessels with the potential for flash emissions need to be aggregated to determine whether the facility is a major source for HAPs for production field facilities. The Burro Canyon Compressor Station meets the definition of a production field facility, and includes two glycol dehydrators and no storage vessels with the potential for flash emissions. PTE from the glycol dehydrators combined are less than 10 tpy of each individual HAP and less than 25 tpy of total HAPs. Therefore, the facility is not subject to the MACT HH requirements that apply at major HAP sources.

The Oil and Natural Gas Production MACT includes requirements for triethylene glycol (TEG) dehydrators at area sources of HAPs, but exempts TEG dehydrators with actual average benzene emissions of less than 0.9 megagrams per year from control requirements and/or operating limitations. Benzene emissions from each dehydrator at the Burro Canyon Compressor Station are less than 0.9 megagrams per year when calculated using GRI GlyCalc 4.0 at the design throughput, and are therefore subject only to the requirements to establish the exemption and maintain records (40 CFR §§63.764 (e)(1) and (d)(1)).

Note that the dehydrators at the facility are not exempt from APEN filing requirements (Regulation No. 3, Part A, II.D.1), and are not exempt from construction permitting requirements (Regulation No. 3, Part B, II.C) because the area source requirements of MACT HH have been adopted and promulgated into Colorado Regulation No. 8 at this time.

ZZZZ – Stationary Reciprocating Internal Combustion Engines:
Under the rules for reciprocating internal combustion engines, for production field facilities, only emissions from glycol dehydrators, storage vessels with the potential for flash emissions, reciprocating internal combustion engines and combustion turbines need to be aggregated to determine if the facility is a major source for HAPS. An analysis was conducted to determine HAP emissions from the equipment at this facility. Total HAP emissions, based on permitted production, were calculated to be less than major source levels. MACT ZZZZ requirements for engines at major sources of HAPs therefore do not apply.

MACT ZZZZ includes requirements for engines located at area sources of HAPs. Based on manufacturing dates and commencement of operation dates reported in APENs received January 21, 2009, MACT ZZZZ requirements do not apply to the engines (see Table 1 at the end of this document).

NSPS Applicability

JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

NSPS JJJJ includes requirements for spark ignition internal combustion engines that commenced construction (i.e., ordered by the owner or operator) after June 12, 2006 (40 CFR §60.4230(4)) or commenced modification or reconstruction after June 12, 2006 (40 CFR §60.4230(5)). Based on manufacturing dates and commencement of operation dates reported in APENs received January 21, 2009, NSPS JJJJ requirements do not apply to the engines (see Table 1 at the end of this document).

Reg 7 Applicability

Section XVII.E.2.b - Section XVII.E.2.b applies statewide to engines that commenced construction or relocation into Colorado after July 1, 2007 (for engines greater than 500 horsepower) or after January 1, 2008 (for engines between 100 and 500 horsepower). All of the engines at the facility were constructed before these dates with the exception of CS11 (see Table 1 at the end of this document). Therefore, the following standards from XVII.E.2.b apply to CS11:

NOx: 2.0 g/hp-hr
CO: 4.0 g/hp-hr
VOC: 1.0 g/hp/hr

Section XVII.E.3.b - Section XVII.E.3.b applies statewide and requires all existing natural gas-fired lean burn engines with manufacturer's nameplate design rating greater than 500 hp to install and operate an oxidation catalyst by July 1, 2010. All engines greater than 500 hp are currently operated with oxidation catalysts.

Compliance Assurance Monitoring (CAM) Applicability

The potential to emit of each of the compression engines at the Burro Canyon Compressor Station, without controls, do not exceed major source levels and the oxidation catalysts are not subject to CAM.

Emissions

The summary of emissions that was presented in the Technical Review Document (TRD) for the original permit issuance has been modified to update the potential to emit based on revisions to permitted emission limits, replacement of the 2,961 horsepower Caterpillar 3612 engines with 2,370 horsepower Caterpillar 3608 engines. Emissions (in tons per year) at the facility from all equipment with emissions above APEN reportable thresholds are:

Emission Unit	NOx	VOC	CO	Formaldehyde	Total HAPs
CS05 – Cat3612 (2961 hp)	22.9	3.0	10.7	1.5	2.9
CS06 – Cat3612 (2961 hp)	22.9	3.0	10.7	1.5	2.9
CS08 – Cat3612 (2961 hp)	22.9	3.0	10.7	1.5	2.9
BCS1 –Cat3516 (1135 hp)	21.9	0.7	3.3	0.3	0.9
BCS2 –Cat3516 (1135 hp)	21.9	0.7	3.3	0.3	0.9
BCS3 –Cat3516 (1135 hp)	21.9	0.7	3.3	0.3	0.9
CS11 – Cat3612 (3300 hp)	25.5	3.3	11.9	1.7	3.2
CS09 – Cat3608 (2370 hp)	18.3	2.4	8.6	1.2	2.3
CS10 – Cat3608 (2370 hp)	18.3	2.4	8.6	1.2	2.3
TOTAL	**196.5**	**19.2**	**71.1**	**9.5**	**18.9**

The Potential to Emit (PTE) shown above is based on permit limitations. Actual emissions were not listed on the most recent APENs submitted to the Division.

III. Discussion of Modifications Made

Source Requested Modifications

A renewal application submitted by Evergreen Operating corp. was received on February 27, 2004. The application requested the following modifications:

- A change in the title of the facility contact person,
- A change in the serial number for CS08 to 1YG00123
- Removal of the conditions requiring that records be maintained in electronic or hard copy form at 1401 17th Street, Suite 1200, in Denver,
- Removal of the monthly fuel consumption limit for BCS1, BCS2, BCS3 and CS11,
- Substitution of two Caterpillar 3608 (2370 horsepower) engines for the previously permitted Caterpillar 3612 engines which were not yet installed (originally permitted under 98LA0568 and 98LA0569),
- An update to the engine heat rates, fuel consumption, emission factors, emissions and catalyst efficiencies for CS05, CS06, CS08, CS11, BSC1, BSC2 and BSC3, and
- A change in the catalyst compliance monitoring parameters to replace operationally difficult readings.

The Division received a request on June 28, 2004 (via email) to modify the portable monitoring requirements for engines to allow for testing within 30 days following the end of the quarter in the event that the 100 hour threshold of use is reached during the final month of the quarter.

The Division received a request for a name change (to Pioneer Natural Resources, USA) and a change to the responsible official on October 18, 2004.

The Division received a request on February 24, 2005 (via email) to remove the monitoring requirement for catalyst exit temperature

Therefore, all of the source's requested modifications were addressed in the renewal application as follows:

Cover Page & Permit Headers

The Division changed the company name to Pioneer Natural Resources, USA.

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The Division updated the Company name, the responsible official, the facility contact person and the facility contact information.

Section I

The Division updated the permitted activities description to reflect the current equipment configuration and the applicable construction permit numbers. The Division removed Conditions 1.6 (which includes a specific address for records retention) and 1.7 (requiring records to be kept in electronic or hard copy form) The Division has included language throughout the permit that allows the permittee to keep records on-site, or at a local field office. The permittee is still required to produce documents in a timely manner when requested by the Division.

Construction permits 04LA0302 and 04LA0303 were added to Condition 1.3 and 98LA0568 and 98LA0569 were removed.

Section II

Section II.1 – Internal Combustion Engines

Emission Unit #	Engine	Construction Permit #
CS05	Caterpillar 3612- 2,961HP w/ Catox	96LA721-2
CS06	Caterpillar 3612- 2,961HP w/ Catox	97LA524
CS08	Caterpillar 3612- 2,961HP w/ Catox	98LA0567
BCS1	Caterpillar 3516- 1,135 HP w/ Catox	00LA0331
BCS2	Caterpillar 3516- 1,135 HP w/ Catox	00LA0332
BCS3	Caterpillar 3516- 1,135 HP w/ Catox	00LA0333
CS11	Caterpillar 3612- 3,300 HP w/ Catox	03LA0054
CS09	Caterpillar 3608- 2,370 HP w/ Catox	04LA0302
CS10	Caterpillar 3608- 2,370 HP w/ Catox	04LA0303

The Division received a request for a name change (to Pioneer Natural Resources, USA) and a change to the responsible official on October 18, 2004. APENs for the compression engines were submitted to the Division on December 20, 2004; these APENs requested both the transfer of ownership and the emissions and throughput changes described in the operating permit renewal application. The Division issued modified initial approval construction permits for the compressor engines on April 16, 2007. The Division received a self certification package for these initial approval permits on October 15, 2007 and an updated Operation and Maintenance Plan on July 17, 2008. Rather than reissuing the construction permits as Final Approvals, the Division is incorporating the final approval requirements into the Operating Permit (as per Regulation No. 3, Part B, Section III.G.5). The Title V Operating Permit was updated as follows (all compression engines were combined into Section II.1 in order to reduce duplication):

1. Applicable Requirements –

The appropriate applicable requirements are as follows (note the following terms and conditions apply to each engine individually):

- Emission and consumption limits:

Emission Unit #	NOx Limit (tpy)	VOC Limit (tpy)	CO Limit (tpy)	Fuel Limit (MMscf/yr)
CS05	22.9	3.0	10.7	219.0
CS06	22.9	3.0	10.7	219.0
CS08	22.9	3.0	10.7	219.0
BCS1	21.9	0.7	3.3	90.6
BCS2	21.9	0.7	3.3	90.6
BCS3	21.9	0.7	3.3	90.6
CS11	25.5	3.3	11.9	244.1
CS09	18.3	2.4	8.6	175.3
CS10	18.3	2.4	8.6	175.3

  The construction permits also included individual formaldehyde limits for each engine. Because the facility is synthetic minor for HAPs and facility-wide formaldehyde emissions are limited to 9.5 tons per year, the construction permits also include a requirement track and calculate formaldehyde emissions from insignificant activities and to limit such emissions to less than 1000 lb/year. Therefore, the Operating Permit has been modified to include a facility-wide limit for formaldehyde from the permitted engines (9.5 tons per year), and a facility-wide limit for formaldehyde from insignificant activities (1,000 lb/yr). The individual emission unit limits on formaldehyde have not been included. Monthly limits in the construction permits for the first year following issuance (April 17, 2007) are no longer applicable.

- The construction permits included requirements to equip the engines with oxidizing catalysts with reduction efficiencies of 85% for CO, VOC and formaldehyde, and to submit an operation and maintenance plan identifying operating parameters that would replace the specific control efficiencies in the final permit. A revised O&M plan was received on July 17, 2008. The requirements to monitor operating hours, engine exhaust temperature, oxygen content, pressure drop across the catalysts and CO reduction efficiency were included in the plan and incorporated into the Operating Permit renewal in place of the specified control efficiencies. However, condition 1.8, which retains the 85% control efficiency for CO, was added as discussed below.

- Condition 1.8 was added in accordance with Division policy requiring semiannual CO reduction efficiency monitoring for sources that are synthetic minor HAP sources with HAP limits greater than 8.0 tons per year (individual HAPs) or 20.0 tons per (total HAPs). Total formaldehyde emissions from the facility are limited to 9.5 tons per year.

- All of the construction permits incorrectly list the APEN expiration dates as December 20, 2005 (the correct date should have been December 20, 2009). The applicant requested that these values be corrected in the self certification submittal received October 15, 2007. Because previous APEN submittals did not list all non-criteria reportable pollutants (acrolein, acetaldehyde, etc.), the Division requested that the applicant re-submit all APENs; these APENs were received on January 21, 2009. APEN expiration dates are not listed in operating permits. However, it should be noted that revised APENs are not required to be submitted until 30 days before expiration date, which is now January 20, 2014, unless any of the conditions listed in Regulation No. 3, Part A, Section II.C occurs first.

- Construction permits 96LA721-2, 97LA0524, 98LA0567, 03LA0054, 04LA0302, and 04LA0303 required source compliance tests for these engines. Source compliance tests were completed on October 2 – 5, 2007 and were approved by the Division on December 11, 2007. Therefore this requirement was not included in the Operating Permit. Note that the construction permits for BCS1, BCS2 and BCS3 did not include testing requirements. According to the permit engineer, these units are not operated regularly and therefore scheduling testing is difficult; because AP-42 factors were used to determine formaldehyde emissions, testing was not required.

- Construction permits 96LA721-2, 97LA0524 and 98LA0567 incorrectly list the engine models as “3512” (the correct models are 3612). The applicant requested that these values be corrected in the self certification submittal received October 15, 2007. The model numbers have been corrected in the operating permit

- Condition 1.1.2 was related to Construction Permits that have been cancelled (98LA568 – 98LA571), and was removed from the Operating Permit.

- Conditions 1.6 and 1.7 were removed (permits 98LA0568 and 98LA0569 has been cancelled).

- Construction permit 98LA0567 did not include the correct serial number for the unit, which should be 1YG00123. This value was corrected in the operating permit.

- The Division received a request on June 28, 2004 (via email) to modify the portable monitoring requirements for engines to allow for testing within 30 days following the end of the quarter in the event that the 100 hour threshold of use is reached during the final 30 days of the quarter due to the need for extra lead time to allow for management to determine when the threshold is exceeded and to schedule the tests.

Because the requirement to monitor hours of operation on the engines is a monthly requirement, the Division agrees to this request and updated the language.

- The Division received a request on February 24, 2005 (via email) to remove the monitoring requirement for catalyst exit temperature in accordance with the Division's updated compliance monitoring matrix. The Division has updated the monitoring requirements accordingly.

- The Division received an APEN on April 1, 2008 notifying the division that compressor engine CS11 was replaced with the same make and model of engine under the permanent alternative operating scenario of the associated construction permit. The Division has included the new serial number in the operating permit renewal and has updated the regulatory requirements as applicable (see Table 1 at the end of this document).

2. **Emission Factors –** The emission factors were submitted during the construction permit process. These emission factors have been converted from gram/hp-hr to lb/MMBtu and are listed in the renewal permit. NOx, CO and VOC emission factors for all engines are from the engine manufacturer; formaldehyde emission factors are from AP-42 Table 3.2-3 (BCS1, BCS2 and BCS3), or based on March 23, 1999 stack test data (CS05, CS06, CS08, CS11, CS09 and CS10).

3. **Monitoring Plan –** Some emission factors from each engine are less than AP42 values, and the facility is a synthetic minor with respect to HAP emissions. The facility-wide limit on formaldehyde is greater than 8.0 tons per year. Therefore, the following monitoring requirements shall apply to each engine:

   - The catalyst inlet temperature shall be monitored daily to determine if it has remained within the manufacturers recommended operating range.
   - The catalyst pressure drop shall be shall be monitored monthly to determine if it has remained within the manufacturers recommended operating range.
   - The source is required to conduct portable monitoring of NOx and CO on a quarterly basis (Section I, Condition 6.1).
   - Inlet/outlet CO content shall be monitored semiannual to determine if it has remained with the permitted reduction efficiency.
   - The BTU content of the natural gas shall be determined semi-annually (twice per year) and used in the emission calculations.

Other Modifications

In addition to the modifications requested by the source, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal. These changes are as follows:

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It should be noted that the monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and certification due dates will be filled in after permit issuance and will be based on permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).

- Added language specifying that the semi-annual reports and compliance certifications are due in the Division's office and that postmarks cannot be used for purposes of determining the timely receipt of such reports/certifications.

Section I – General Activities and Summary

- Conditions 1.4 and 1.5 were updated to reflect current language.
- In Condition 1.4, General Condition 3.g (new general condition for general provisions) was added as State-only requirements.
- The language for the alternative operating scenario for temporary engine replacement was updated to reflect current language and the current engine configuration at the facility (November 12, 2008 version).
- Minor language changes were made to Condition 3 to more appropriately reflect the status of the source with respect to PSD.
- Added a new Section 5 for compliance assurance monitoring (CAM), which does not currently apply to any units at the facility.
- The Summary of Emission Units table in Section 6 (previously Section 5) has been updated to reflect current equipment and control devices.
- Compressor engine model numbers and serial numbers were modified to match the format on the APENs received January 21, 2009.

- The throughput value for the dehydration unit was updated to reflect values on APENs received January 21, 2009.

Section II

- In general, Specific Permit Terms language throughout Section II has been updated to reflect Division's most recent format.

- Section II.1 - Compressor engine model numbers and serial numbers were modified to match the format on the APENs received January 21, 2009.

- Section II.1 – Updated the Btu content of natural gas testing frequency to semi-annually, in accordance with current Division practice.

- Section II.1 – Included Colorado Reg 7 requirements for CS11, which is now subject after permanent replacement in March of 2008.

- Section II.2 – Updated the section to reflect current version of MACT HH and general provisions.

- Section II.3 – updated the portable monitoring section to the current version (6/1/2006) and renumbered the section.

Section III – Permit Shield

- Corrected the citations to point to requirements for area HAP sources rather than major HAP sources. Included citations for both the demonstration of exemption and the requirements for keeping records of the demonstration in the justification. The renewal application did not identify any new or additional non-applicable requirements.

Section IV – General Conditions

- Updated General Conditions to version 02/20/2007

Appendices

- Appendix A was updated to include the most recent plot plan. The applicant's consultant stated in a telephone conversation on 6/24/2009 that emissions from fugitive components are below the APEN reporting threshold of 2 tons per year; therefore "Fugitive Emissions from Components" was added as an insignificant activity.

- Appendices B & C have been updated to the current version (02/20/2007). The requirement to determine if data was continuous has been removed from Appendix C.

- Appendix B was updated to show the model and serial number formatting of the emergency generators as per the January 21, 2009 APEN submittals.

- Compressor engine model numbers and serial numbers were modified to match the format on the APENs received January 21, 2009.

- The notification addresses in Appendix D have been updated

- The table in Appendix F has been cleared of past modifications.

- The fuel design rate for engines has been corrected in Appendix G.

- Added new Appendix H (applicability reports for engine alternative operating scenarios).

III. Public Notice

The public notice period for this renewal permit concluded on August 1, 2009. No comments were received.

Table 1 – NSPS and MACT Applicability for Natural Gas-Fired Engines at the Burro Canyon Compressor Station

Engine	HP	Date of mfg[1]	Startup date[1]	NSPS JJJJ Applicability	MACT ZZZZ Category	MACT ZZZZ Requirements	Colo. Reg 7 XVII.E.2.b Applicability
CS05	2961	Pre-7/1/2007	1998	NA - engine commenced construction before 6/12/2006 (40 CFR 60.4230(a)(4))	Existing 4SLB (engine commenced construction before 6/12/2006 (40CFR63.6590(a)(1)(iii))	NA - Exisitng 4SLB engines at area sources are exempt from subparts ZZZZ and A and no initial notifications are necessary (40 CFR 63.6590(b)(3)).	NA – Engines constructed prior to July 1, 2007.
CS06	2961	Pre-7/1/2007	1998				
CS08	2961	Pre-7/1/2007	5/11/2003				
CS09	2370	Pre-7/1/2007	10/1/2004				
BCS1	1135	Pre-1/1/2008	8/1/2000				
BCS2	1135	Pre-1/1/2008	8/1/2000				
BCS3	1135	Pre-1/1/2008	8/1/2000				
GS1[2]	<260		1998		Existing emergency stationary RICE (engine commenced construction before 6/12/2006 (40CFR63.6590(a)(1)(iii))		NA – Engines constructed prior to January 1, 2008
GS2[2]	<260		1998				
CS10	2370	Pre-7/1/2007	5/1/2007	NA - engine manufactured before 1/1/2008 (40 CFR 60.4230(a)(4)(iii))	Undetermined. The engine could be considered a New 4SLB if construction did not commence before 6/12/2006.	NA - If the engine is a New 4SLB at an area source, it must meet the requirements of NSPS JJJJ (40CFR63.6590(c)), which are not aplicable based on the manufacture date of the engine. If the engine is an Existing 4SLB at an area source, it is exempt from subparts ZZZZ and A.	NA – Engines constructed prior to July 1, 2007.
CS11[3]	3300	8/27/1998	3/15/2008				Date of construction/date the engine was ordered is listed as unknown on the January 21, 2008 APEN, so it is assumed that the standards apply.

Notes

1. Dates are based on APEN data received by the Division January 21, 2009.
2. GS1 and GS2 are emergency generators (insignificant activities)
3. CS11 was replaced with a like-kind model under the permanent AOS as of March 15, 2008. The APEN for this replacement was received on April 1, 2008.
4. Construction permits including for the compressor engines were issued on April 16, 2007. These permits limited total formaldehyde emissions at the facility to less than 10 tons per year. Because an enforceable HAP limit was in place prior to the compliance date for existing engines under MACT ZZZZ (June 15, 2007), the facility is considered an area source with respect to MACT ZZZZ.